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musically uncultivated Russian, like other primitive men, regards his music as the expression of feeling, of moods and emotions. The national folk-songs reveal the national character. The perception of the musically uncultivated man is completely in agreement with that of the most highly trained musicians as regards the primary relation of music to feeling, its function as the natural means of expressing emotion, and the characteristic types it assumes.

The utmost that music can do, is to express so definitely the emotions naturally arising from an event that, when we are once given a clue, the feelings expressed may suggest the ideas which awaken the feelings. Unlike the primitive music of other races, that of the Russian has no five-toned scale. This is the common major scale with the fourth and seventh omitted. The complete diatonic major or minor scale is used. This implies a stage of development in advance of that in which songs are made up of five tones only, or a natural musical endowment superior to that of most primitive races. The development of the five-toned scale into an eight-toned one is explained, and different theories given. But the dual nature of harmony has not yet been proven.

The theory that the minor chord is due to our perception of the undertone series, depends primarily on the assumption that the minor chord is a perfect concord. Though it is commonly assumed to be so, the fact that the Indians, as well as Bach, will end a minor song with a major chord, will have to be otherwise explained. In singing the minor, he is guided by no preconceived theory. He freely expresses himself. One reason why his effort at spontaneous emotional expression should take on the shape of the successive tones of a minor chord, with a filling in of tones which imply the dominant and sub-dominant chords, is that the five-toned major scale is easy to sing, and the five-toned minor is not only as easy, but is made up of the same tones in the same order. In changing them from a major to a minor key, only the starting point is changed, and not the melody or harmony. Fourteen "Russian folk-songs" are given, including a "love song," "harvest song," "comic song," and others, in Great Russian and Little Russian (Cossack). All are supposed to be characteristic types, and to reveal the state of feeling which prompts each song. C. W. D.

II.—NEUROLOGY, MORBID PSYCHOLOGY, INSTINCT.

By ASSISTANT PROFESSOR C. F. HODGE.

The Nerve Cell Considered as the Basis of Neurology. A. E. SCHÄFER.
Brain, Vol. XVI. pp. 134-169. 18 Figs. in text. 1893.

An important point in the terminology of the subject is first to receive attention. In 1891 Waldeyer proposed the term neuron to designate the anatomical unit, cell-body with processes attached, of the nervous system. Schäfer insists that just as we include processes with the cell-body in all other tissues, so here the term nerve-cell should be held to its primitive meaning and cover body and processes. Waldeyer's term "neuron" Schäfer appropriates to designate the axis-cylinder process. Protoplasmic processes are given the appropriate name of dendrons. With these terms clear, it becomes possible again to classify nerve-cells intelligently. "All possess at least one neuron." They may be dendritic or adendritic,

mononeuric, dineuric or polyneuric. For the branches of neurons, Cajal's term, *collaterals*, is adopted. While thus distinguishing between these two kinds of processes, the author frankly states that "it is impossible to say positively that there is any essential difference between the neurones and dendrons." Neurons and dendrons end finally alike in terminal arborizations; and this fact is taken to support the view that the structure of the axis-cylinder is fibrillar. The length of a neuron before breaking up into its terminal arborization has proved serviceable for purposes of classification. Upon this distinction Golgi based his classification into "motor" and "sensory." Objections have accumulated against this classification to such an extent that the author deems it necessary to substitute for Golgi's cell of the first type projection-cell, and intermediary-cell for "central," or cell of the second type.

The more important views advanced in the paper may be gathered from an abbreviation of the seven conclusions: 1. "That every nerve-cell forms a structural element which is anatomically isolated from, but in physiological continuity with other nerve-cells." 2. "That the physiological continuity of these elements depends on the contiguity either of the ramified cell processes of different nerve-cells with one another or of the ramified processes of one cell with the body of another cell." 3. "That the same nerve-impulses do not necessarily pass from one element of a nerve-chain to the next, but that more probably new impulses (often of different rhythm) are generated in the successive elements of the chain." 4. The converse of 3. 5. "That either the body of the cell or any of its processes may be concerned both with the starting and with the transmission of nerve-impulses; and, that these may originate by acts of contraction, causing waves of pressure or variations of surface-tension to traverse the fibrils." 6. "That the body of the cell is especially concerned with presiding over the nutrition of the whole cell-element; this trophic function being intimately associated with the presence of the nucleus. Nevertheless nerve-impulses may both originate in and be conducted by the cell-body. The dendrons or protoplasmic processes, being extensions of the protoplasm of the cell, may primarily serve to assist in the nutritive processes, as was supposed by Golgi, but they undoubtedly also, like the cell-body itself, may in some cases convey nerve-impulses." A. 7. "That the ordinary centrifugal paths are blocked for centripetal impulses, although the centripetal paths may convey centrifugal impulses, this physiological difference being correlated with a difference of anatomical relationship at the junction of the respective cell-elements."

The figures are culled from best sources, new and old, from M. Schultze, Ranzier, Cajal, Retzius, Lenhossek; and these are supplemented by original diagrammatic compilations, which add clearness to the subject.

Zur Frage über den Bau der Nervenzellen und über das Verhältniss ihres axencylinder (Nerven) Fortsatzes zu den Protoplasmafortsätzen (Dendriten). A. S. DOGIEL. *Archiv für Mikroskopische Anatomie*, Bd. 41, S. 62-87, Taf. IX. and X. Bonn, 1893.

Zur Frage über das Verhalten der Nervenzellen zu einander. A. S. DOGIEL. *Archiv für Anatomie und Entwicklungsgeschichte*, 1893, S. 429-434, Taf. XVI.

These papers are the latest in a series of six which have appeared from the above writer since 1888. Their chief interest in the present connection attaches to the strong evidence which Dogiel has